Reforming Post-Secondary Education in Colorado (IP-9-1997)

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Issue Paper

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Executive Summary

This study is the first to provide a comprehensive analysis of private post secondary schools, based on survey data from the Colorado Commission on Higher Education and the Colorado Private School Association. In this report we explore the growth of the Colorado economy and the demands that growth is creating for education and training of the labor force. We compare the benefits and costs of private and public post secondary schools from the perspective of Colorado citizens and taxpayers. This analysis is the basis for policy recommendations to improve the efficiency and equity of post secondary education. The following is a summary of the major findings in the study.

Post Secondary Education and the Growth of the Colorado economy:

1. The Colorado economy is growing at a rapid pace, exceeding that for the national economy. This rapid growth is creating demands for a better educated and trained labor force. Tight labor markets, particularly in rapidly growing industries and occupations, are beginning to constrain the growth of the state economy.

2. Over the period 1995-2000 the Colorado Department of Labor projects an increase of over 48,000 jobs annually. It is estimated that 33,000 of these jobs will require training beyond high school. But half of these jobs, or 16,000 will require training beyond high school but less than the baccalaureate level.

3. Projected job growth does not match up well with the levels and kinds of education and training provided by our post secondary education institutions. **At the two year level we are training only about 10,000 graduates per year, which is 6,000 less than that required to fill the jobs being created. On the other hand, we are educating substantially more graduates at the baccalaureate level and above, relative to the new jobs requiring that level of education.**

4. Most new jobs are being created in the occupational categories of professional, paraprofessional, and technical, and in the service occupations. A detailed projection of job growth reveals very rapid growth in occupations requiring training at the two year level.

5. The education and training provided by private two year education institutions matches up well with the projected job creation in the Colorado economy. On the other hand public post-secondary education institutions, with their focus on baccalaureate levels of education, are failing to meet the demands for an educated and trained labor force in our rapidly growing economy.

Comparison of Private and Public Post Secondary Education

1. Private post secondary schools enrolled 40,764 students representing 18% of the total students enrolled in post secondary education and training in Colorado. Private schools account for the following shares of students at different levels of education: research universities 29%, four year colleges 16%, and two year colleges 10%.

2. Private schools graduated 9,272 students, representing 25% of all graduates from all post secondary institutions. The share of private school graduates was about the same for all levels of post secondary education.

3. **The average cost per student enrolled in private schools is 7% lower than cost per student in the public schools.** There are significant differences in cost per student enrolled in the different levels of education. Private research and four year colleges have a significant cost advantage compared to public research and four year institutions. Private two year schools have higher cost per student enrolled compared to the public schools.

4. **The average cost per student graduated in private schools is significantly lower than the cost per graduate in public schools. It costs about one fourth as much to train students in private schools compared to public schools, and this cost advantage is true for all levels of post secondary education.**

5. Most of the cost of private schools is financed by tuition. Tuition charges are significantly higher in private schools at all levels of post secondary education.

6. Total state and local government transfers to post secondary schools in Colorado is $490 million. Most of those government transfers, $477 million, are received by the public schools, with private schools receiving $13 million. Government transfers to private schools average $317 per student compared to $2576 per student in the public schools. Only 4% of private school expenditures are financed by government transfers, compared to 28% for public schools.

7. Of the students enrolled in private schools roughly half complete their training within 150% of the program length.

8. Private schools on average place 86% of their students trained and available for work in a job in the field for which they have been trained. Most of these private schools have a high success rate based on the percentage of students who complete the programs and are placed in a job for which they have been trained.

9. Private schools have a significant impact on the Colorado economy. They generate $276 million in tuition revenue. Total expenditures of the private schools is $353 million. In addition, the consumption expenditures of students enrolled in private schools has a multiplier effect on state income.

10. **Private post secondary schools currently save Colorado taxpayers $92 million dollars, based on the subsidy these students would receive if they attended a public school.** If we could educate the students in our public schools as efficiently as we do in our private schools the savings to Colorado families and taxpayers is estimated in the hundreds of millions of dollars.

11. Private post secondary schools have expanded more rapidly than public schools in meeting the demand for a highly trained work force. Private schools offer training in hundreds of occupations, many of which are not offered in the public schools.

Summary of Policy Recommendations

1.On both efficiency and equity grounds Colorado should reexamine the way in which the state government has chosen to support post secondary education. If private schools are more efficient than public schools, and more responsive to the increased demands for a highly educated and trained labor force, then **a policy to promote the expansion of private schools relative to public schools could result in a significant savings to individual citizens and to the state.** It would be difficult to shift resources from public to private schools in a discontinuous way without affecting costs; but policy reforms are both feasible and desirable.

2. Colorado should equalize state transfers for private and public post secondary school. Equalization can be accomplished in a revenue neutral way, that is without affecting the total state financing for post secondary education.

3. There are basically three different routes that state policy could take toward the equalization objective. One route is to offer tax incentives or tuition credits to families who choose private post secondary schools. (This was the approach of a bill considered, but not adopted, by the Colorado Legislature in 1996.) The disadvantage is that the credits clutter up the tax code, something that previous tax reforms attempted to eliminate. Further, it would be difficult to extend this tax break without extending tax breaks in general.

A reallocation of state resources to private secondary education could also be achieved through budgeting and appropriations procedures. This is undesirable because it would lead to the same rent seeking and inefficiencies observed in direct state transfers to the public schools. One would also expect a vigorous effort by the public schools presently receiving state transfers to block a reallocation of these funds to the private schools.

Thus, the most efficient and equitable route to reallocating state resources to these private schools is through a tuition voucher system. The present level of state subsidy could be used to provide a $2,000 voucher per year to every student enrolled in private or public post secondary education in Colorado. Limiting the voucher to in-state students would permit an even higher value for the voucher per student. We would not advocate modifying the voucher for different levels of education, nor for different income levels. The voucher system we propose would level the playing field for private and

public schools, and would thereby increase incentives to improve productivity and efficiency in post secondary education. The voucher system would increase incentives for parents and students to seek the best education for their dollars.

4. Voucher reform might be introduced in stages so that over time the current system of direct appropriations and grants to both public and private schools would be replaced by the voucher system. Initially the size of the tuition voucher for private schools might be limited (to say, $1000), and over time the voucher could be adjusted upward as the system of direct appropriations and grants is replaced by the voucher system. An advantage of gradual privatization of post secondary education through a partial tuition voucher is that both the private and public schools would have time to adjust to the changing demands for educational services. We would expect more efficient and productive educational institutions that responded to these demands to expand, while some current institutions would have to contract their educational services. The private schools that are already responding to these market pressures would most likely benefit from this a competitive environment for the provision of educational services.

Introduction

Persons who are familiar with post secondary education in Colorado might legitimately ask why reforms are being proposed or why such a study is even needed. Colorado has a higher ratio of college graduates per member of the population than any other state in the union. Post secondary institutions in Colorado include a mix of private and public schools offering education in a diverse range of fields, attracting students from around the world. It is not enough to show that these institutions turn out many graduates; we must also attempt to assess how well they are performing.

Before we as Colorado citizens become sanguine regarding our post secondary institutions, we must ask if these institutions are educating and training young people for the kind of job market that they will encounter in future years. The Colorado economy has been growing at a very rapid pace. The structure of the state economy is changing with rapid growth of advanced technology industries and financial services. This is reflected in **a tight labor market for the rapidly growing industries and certain occupations. There is ample evidence that this tight labor market is already beginning to constrain the growth of the economy, and these constraints are likely to worsen in coming years.** When we confront the projected growth in employment and occupational requirements with the labor force being trained in our post secondary institutions, we find evidence of a serious mis-allocation of resources. The kinds of education and training provided in our post secondary institutions are not meeting the labor force requirements of our economy.

We must also ask if our post secondary institutions are meeting the demands for education and training from the perspective of Colorado citizens. Citizens want the most value for their dollars from their post secondary educational institutions. Households with students attending these institutions have a particular interest in the value of educational services their children receive. As taxpayers, all citizens have reason to expect the highest value for their tax dollars spent in post secondary education. The opportunity cost of tax dollars spent in public institutions is the money that could have been spent in private institutions. When we compare the costs of education in our public and private post secondary education institutions, we also find addition evidence of a serious mis-allocation of resources.

An assessment of the performance of post secondary education institutions requires analysis of the benefits as well as the costs of that education. Economists focus on the effects of education on an individual's lifetime earnings. In this view, education is an investment in human capital that will result in higher lifetime earnings than the individual would have earned in the absence of that education. However, an individual may benefit from education in other ways that are not reflected in lifetime earnings. Education enhances an individual's abilities in the family and in the marketplace in ways that improve the family's welfare.

Education may also generate benefits to the society, external to the individual and family. For example, an educated individual is better able to participate in the democratic process, improving the functioning of a democratic society. Conversely, individuals who do not complete a post secondary education are more likely to incur unemployment, or be involved in criminal activities that impose costs on the society.

An assessment of the broader benefits of education is beyond the scope of this study. However, we do have evidence that provides some insight into the benefits of post secondary education to the individual student.

Individual students who compare the costs and benefits of post secondary education will attempt to project the effects of that education on their lifetime earnings. There are two pieces of information that are important, if not essential, in making a

rational decision: the completion rate and the placement rate. **The completion rate permits individuals to estimate their probability of completing a given post secondary education program within the program period. The placement rate permits individuals to estimate their probability of attaining a job in the field for which they have been trained.**

We can combine these two pieces of information to estimate what we define as the success rate.**The completion rate times the placement rate equals the "success rate" for a given school.** At a two-year paralegal school, if eighty percent of the students finish the school within two years, and seventy-five percent of the students who graduate on time get a job as a paralegal, then the success rate is sixty percent. (80% x 75%=60%) The success rate can be used by individuals to estimate their probability of both completing the program and being placed in a job in the field for which they have been trained.

We should emphasize the limitations of these measures of the benefits of post secondary education. They do not capture the full benefits of education to the individual or the society over the individual's lifetime. These ex-post measures of completion and placement rates for a given education institution help an individual to make a rational decision about the costs and benefits of post secondary education at a given point in time, but they do not guarantee that a particular individual will have the same success rate in some future time period. With these caveats in mind we turn to the empirical evidence.

Post Secondary Education and the Colorado Economy

Economic Growth

The Legislative Council of the Colorado General Assembly provides an analysis of economic growth in the Colorado economy. The following discussion draws on the analysis in various issues of their publication, *Colorado Economic Chronicle*.

Economic growth in Colorado continues the healthy pace achieved earlier in the 1990s. Over most of this decade the growth of the Colorado economy has outpaced that for the nation as a whole. However, the gap between Colorado's growth and the national economy is expected to narrow during the next several years. Strength in nonresidential construction, advanced technology, and financial services will continue to generate high rates of growth during the next few years.

Rapid economic growth and a strong job market have resulted in significant improvements in incomes and wages. Personal income in Colorado continues to increase more rapidly than that for the nation as a whole. Personal income growth is expected to peak in 1997 at 7.2 percent and then slow to 7.0 percent in 1998, and 6.8 percent in 1999.

Wages and salaries, which comprise about 60 percent of personal income, have also been increasing at a rapid pace. Wage and salary growth increased 8.1 percent in 1996, and is projected to slow to 7.5 percent in 1997, and 7.2 percent in 1998. The high rate of growth in wages and salaries reflects the creation of higher wage jobs and a tight labor market, and this trend is projected to continue in the 1990s.

As the gap between Colorado's growth and national growth rates narrows the economic incentive for people to move to Colorado will diminish. As in-migration decreases, the population growth rate will begin to decline. **The average annual growth of population was 2.7 percent from 1991 to 1995, but will slow to a 1.7 percent average rate between 1996 and 2000. As in-migration slows the Colorado economy will become more dependent upon the labor force within the state to fill the labor demands of a rapidly growing state economy.**

Employment Growth

Rapid economic growth has been accompanied by high rates of growth in employment in the 1990s. Employment growth is projected to decline slightly in the next few years. Job growth was 3.4 percent in 1996, and is projected to be 3.4 percent in 1997, and 3.3 percent in 1998.

The major constraint on employment growth in the next few years will be a tight labor market. Colorado's unemployment rate fell to 3.5 percent in 1997, after averaging 4.2 percent each in the previous three years. These unemployment rates are

significantly below the national averages. Tight labor markets are already hindering growth in some sectors of the Colorado economy. **Many businesses report that very tight labor markets are making it difficult for them to find qualified workers**.

Post Secondary Education and Employment Growth in Colorado

The evidence that tight labor markets are beginning to constrain economic growth in Colorado has important implications for post secondary education in the state. The question is whether these institutions are providing the appropriate levels and kinds of education and training to meet the labor demands of a rapidly growing economy. Business reports that it is difficult to find qualified workers suggest that there may be a serious problem in post-secondary education in Colorado. To go beyond anecdotal reports, we examine the employment growth for Colorado and relate this data with our own data for numbers of graduates from our post secondary education institutions.

The Colorado Department of Labor has projected the employment outlook in its publication *Occupational Employment Outlook 1995-2000.* The DOL projects an increase of 243,600 jobs over this five year period, or an increase of 48,720 jobs annually.

It is difficult to estimate the level of education and training required for these new jobs, but we can use some indirect evidence from the United States Department of Labor. The US DOL estimates that in the U.S. two thirds of all new jobs will require education beyond highschool; but only half of the jobs requiring training beyond highschool will require a bachelor's degree. This is probably a conservative estimate for Colorado because of the higher concentration of high technology industries in the state. If this projection is applied to the Colorado data then the total jobs created requiring education beyond highschool will be about 163, 000 over the five year period, or 33,000 per year. Of those jobs, only half will require a bachelors degree, the other half will require training beyond highschool but less than the baccalaureate level, i.e. 82,000 over the five year period, or 16,000 per year.

How does this projected job growth match up with the education and training provided in our post secondary institutions? The answer is, not very well at all. At the two year level, we are currently training about 10,000 graduates per year. That is about 6,000 graduates per year less than that required to fill the new jobs requiring that level of training**.** On the other hand, we are training about 27,000 graduates per year at the baccalaureate level or above. That is about 11,000 graduates per year more than that required to fill the new jobs requiring a bachelors degree. Even if these projections are off by a significant margin, it is difficult to escape the conclusion that there is a serious mis-allocation of resources in our post secondary schooling in Colorado. **We are training far fewer graduates from two year institutions, and far more graduates from four year institutions, relative to the demands for workers trained at these levels.**

There is also evidence of a mis-allocation or resources in the kinds of training offered. Of the 10,000 graduates from our two year institutions, almost three fourths are trained in public community colleges, and only one fourth in our private two year colleges. Many of those trained in public community colleges go on to earn a bachelor's degree. Almost all students trained in private two year institutions enter directly into the labor force. Further, the kind of training provided by these private two year institutions is a better match for the kind of jobs being created in the Colorado economy. This is revealed in the more detailed occupational outlook projected by the Colorado Department of Labor.

Occupational Outlook by Major Occupation

The problems created by a tight labor market in Colorado are even more evident when we examine this occupational outlook by major occupations over the period 1995-2000. Several major occupational categories are projected to be very tight with severe problems in finding qualified worker.

Most new jobs will be created in the occupational category professional, paraprofessional, and technical. Growing at an annual average rate of 3.1 percent, more than 65,000 career opportunities are expected to be added to these occupations.

The next largest job growth will occur in the service occupations. Although the services segment is expected to increase at a slightly faster rate, 3.3 percent, fewer jobs will be created since this sector is a smaller part of the total. Employment levels for

this sector are expected to rise by 56,000 in the five -year period.

Managerial and administrative occupations are projected to grow 3.1 percent per year and create about 25,000 new jobs. Sales occupations are also projected to increase at a rapid pace of 2.7 percent per year, creating about 35,000 new jobs.

Clerical and administrative support occupations will increase at a slower pace of 1.6 percent per year. However, this is a major source of employment, so despite the slower growth rate these occupations will add about 27,000 new jobs.

The slowest growth rate of 1.4 percent is projected for the blue collar category which includes jobs involved with production, construction, operation, maintenance, and material handling. The blue collar sector will still create more than 30,000 jobs as it is the second largest major occupation.

The remaining major occupational category, agriculture, forestry, and fishing is expected to contribute 4,000 new jobs to Colorado's economy.

Occupational Outlook by Individual Occupation

Evidence of tightness in Colorado's labor market is revealed in greater detail in the occupational outlook by individual occupations. The Colorado Department of Labor makes projections for over 700 occupations. They then rank the 50 jobs that are expected to create the greatest number of new positions; these jobs represent more than 60 percent of the total anticipated net job growth.

In terms of overall numbers, much of the expected growth is concentrated in some of the largest occupations. The occupation expected to create the greatest number of new positions is retail salesperson. This occupation has ranked as the premier job generator for several years at both the state and the national level. Nearly 2,000 people per year are expected to find work in newly created jobs in this field. Several other sales occupations will also generate large numbers of new positions. Marketing and sales supervisors; cashiers; telemarketers; and securities and financial sales are all found on the list of the fifty jobs that are predicted to create the largest number of new jobs.

As mentioned previously, **the category with the greatest opportunity for new openings is the professional, paraprofessional, and technical.** Computer, health, and education are broad categories where a number of the jobs that are either expected to generate a large number of positions and/or are expected to grow at a much faster rate than average can be found. These include: systems analysts, computer engineers, computer support specialists, computer programmers, registered nurses, occupational therapists, physician assistants, teacher aides, and teachers from the preschool level through secondary school.

Job seekers looking for a position classified within the services bracket should also find many opportunities for employment. Some of the jobs that are expected to create a large number of new openings include nursing aides and orderlies, correction officers, waiters and waitresses, janitors and cleaners, and child care workers. Personal and home care aides is expected to grow on an average annual basis of 8.3 percent. A few occupations within this category are projected to experience jobs losses. These include barbers, and butchers and meat cutters.

The blue collar category contains the largest number of occupations that are expected to decrease during the projection interval. As mentioned previously, there are several causes for this:

1. Many of the occupations in the mining and construction industries are codified in this category. Since these industries are projected to lose employment, the occupations that are specific to them should also decrease, e.g. plumbers, pipefitters, and steamfitters, electricians, and first line construction supervisors.
2. Some of the occupations are being diminished due to technological changes. Many of the traditional prepress printing jobs are being made obsolete by computer technology. Thus, compositors and typesetters will find less demand for their skills, while electronic pagination workers will enjoy increasing job opportunities.
3. Many of the occupations classified as blue collar currently employ a small number of people with very specialized skills. Even if high growth rates are projected for some of these positions, it does not translate into a large number of new job openings. Some of the blue collar jobs that are expected to provide a large number of new positions or are predicted to be growing at a faster rate than average include: truck drivers, data processing equipment repairers, and electronics repair-commercial and industrial.

The clerical category also contains several jobs that will be adversely affected by technological change. Examples of these include meter reader, utilities; bank tellers; computer operators; andtypists and word processors. This last occupation is being

affected not only by technology but also by changing work practices. There are also many occupations within this category that are expected to add a significant number of new jobs. Persons seeking work as clerical supervisors, receptionists and information clerks, general office clerks, and teacher aides and education assistants should find a strong job market for their talents.

Many of the occupations in the managerial partition tend to be concentrated in a related industry. Thus, the outlook for these careers tends to be more closely tied to the projected employment gain or loss for that industry. For example, mining managers will face an unfavorable job market since employment in the mining industry is projected to decrease and mining managers are not found in other industries. Conversely, food service and lodging managers are expected to enjoy a healthy job market since employment in the eating and drinking places category is projected to increase by more than 4,000 each year.

The last major occupational category is agriculture, forestry, and fishing. Occupational data is collected only from the agricultural services subdivision. Gardeners and grounds keepers, and lawn maintenance workers are two of the categories expected to grow by a significant amount.

A Comparison of Private and Public Post Secondary Education

To answer the question how well our post secondary schools are performing, we compare private and public post secondary institutions. Two sources of data are utilized in the study. The Colorado Commission on Higher Education (CCHE) collects data on private as well as public post secondary schools. The Colorado Private School Association (CPSA) also collects data for member schools. The CCHE sample data is used to analyze enrollments and graduates, average cost per student enrolled, average cost per graduate, tuition revenue, and government transfers; the CPSA sample is used to analyze completion rates, placement rates, and success rates, (For a detailed discussion of this data base see the appendix 2, Sample Data).

Enrollments and Graduates

Table 1, Enrollment*

INSTITUTION	undergrad. enrollment	percent	graduate enrollment	percent	total enrollment	percent
Private Research Universities	13,430	22%	9,027	48%	22,457	29%
Public Research Universities	46,521	78%	9,898	52%	56,419	71%
subtotal	59,951	100%	18,925	100%	78,876	100%
Private Four Year Colleges	8,665	16%	1,012	12%	9,677	16%
Public Four Year Colleges	44,543	84%	7,315	88%	51,858	84%

subtotal	53,208	100%	8,327	100%	61,535	100%
Private Two Year Colleges	8,630	10%	0	0%	8,630	10%
Public Community and Local District Colleges	76,976	90%	0	0%	76,976	90%
subtotal	85,048	100%	0	0%	85,606	100%
Total Private	30,725	15%	10039	37%	40,764	18%
Total Public	168,040	85%	17213	63%	185,253	82%
Total Private and Public	198,765	100%	27252	100%	226,017	100%

*CCHE data

The first step in measuring the performance of private and public post secondary education institutions in Colorado is to compare enrollments. In this sample of schools, of the total 226,017 students enrolled, 40,764 students were enrolled in private institutions, comprising 18% of the total. Within the research group, private research universities enrolled 22,457 students accounting for 29% of the total. A little less than half of the graduate students in the research group were enrolled in private research universities. Private institutions accounted for smaller numbers and shares of students in the other categories of post secondary institutions. Private four year colleges enrolled 9,677 students, accounting for 16% of the total in four year institutions. Private two year colleges enrolled 8,630 students, accounting for 10% of the students enrolled at this level.

Table 2, Graduates*

INSTITUTION	total graduates	percent
Private Research Universities	4,177	25%
Public Research Universities	12,848	75%
subtotal	17,025	100%
Private 4 year Colleges	2,336	23%
Public 4 year Colleges	7,905	77%
subtotal	10,241	100%
Private 2 year Colleges	2,759	26%
Public Comm. & Local Dist. Colleges	7,674	74%
subtotal	10,433	100%
Total Private	9,272	25%
Total Public	28,427	75%
Total Private and Public	37,699	100%

*CCHE data

Private schools accounted for 25% of the total graduates from post secondary institutions in Colorado. The share of private

schools in total graduates was roughly the same for each of the three types of institutions. This evidence provides us with our first clue in comparing the performance of private and public post secondary schools in Colorado. The higher share in total graduates compared to total enrollments suggests that private schools are graduating a higher percentage of the students enrolled compared to public schools. This is confirmed by the evidence for completion rates in the CPSA sample, discussed later in this report.

Table 3, Average Cost per Student Enrolled

INSTITUTION	Expenditures per student per year	Expenditures for private students as a % of expenditures of comparable public students
Pvt. Res. Universities	10,604	55%
Publ. Res. Universities	19,371	
Pvt. 4 yr. Colleges	5,613	83%
Publ. 4 yr. Colleges	6,746	
Pvt. 2 yr. Colleges	6,986	187%
Public Com. & Local Dist. Colleges	3,739	
Total Private	8,653	93%
Total Public	9,341	

*CCHE data

The next step in our assessment of private and public post secondary education in Colorado is a comparison of costs. The first thing to note is that in terms of total expenditures, post secondary education is a two billion dollar industry. Private schools account for slightly less than one fifth of these total expenditures at all levels of post secondary education.

The data in our sample permits us to distinguish between total educational and non-educational expenditures for each institution. Non-educational expenditures account for only about 12% of total expenditures. That share is roughly the same across different levels of education, and across private as well as public institutions.

A major issue explored in this study is the cost of education per student. From the perspective of the individual student the relevant cost is the total cost of obtaining a degree. Unfortunately the data does not permit us to estimate these total costs per student. We provide a crude measure of average cost per student by dividing total expenditures by students enrolled.

The average cost per student enrolled is about 7% lower for private schools compared to public schools. However, the study reveals the importance of distinguishing between different types of institutions in comparing the costs of private and public post secondary education. At the research university level, the cost per student enrolled in private schools is about half the cost per student in public schools. At the four year college level, the cost per student enrolled in private schools is about 20% lower than that in public schools. In contrast the cost per student enrolled in private two year schools is almost double that in public community and local district colleges.

Table 4, Average Cost per Graduate

INSTITUTION	Expenditures per graduate	Per graduate expenditures. Private school cost as a per cent of comparable public school cost
Pvt. Res. Universities	57,009	67%
Publ. Res. Universities	85,065	
Pvt. 4 yr. Colleges	23,254	53%
Publ. 4 yrs. Colleges	44,255	
Pvt. 4 yr. Colleges	21,853	58%
Publ. Comm. & Local Dist. Colleges	37,501	
Total Private	38,044	63%
Total Public	60,876	

*CCHE data

An alternative measure is the average cost per graduate in private and public schools. **The cost per graduate in private schools is about two thirds that of the public schools.** While the cost per graduate is lower at all levels of private education, the greatest cost advantage is at private four year schools where the cost per graduate is about half that of the public four year institutions.

The obvious question is why it costs so much more per graduate in public schools compared to private schools. These cost differences should not be due to differences in part time versus full time students because the CCHE data converts the student hours into full time equivalence for comparison purposes. Nor can these cost differences be explained by differences in budget definitions; if anything the budget definitions bias the public school costs downward. Budgets for the public schools are operating budgets that do not include nonoperating costs. The most important of these omitted costs are capital expenditures. Inclusion of these costs would significantly increase the cost per student in public institutions.

One possible explanation for these cost differences is the difference in the nature of the education offered by these institutions. However, we should emphasize that the methodology employed in this study is designed to reduce if not eliminate these differences. We compare three different levels of schooling, and exclude specialized institutions in both the public and private sector in order to have comparable post secondary institutions.

It is often argued that the cost of training graduate students exceeds that for undergraduate students. A careful examination of the data shows that this would also bias the cost per student downward in the public schools. The enrollment data for research institutions shows that graduate students comprise 40% of the total students in private schools compared to only 17% in the public schools. For the four year institutions, graduate students comprise about the same share of students in private schools compared to public schools. If it costs more to train graduate students than undergraduate students we would expect the costs per

student to be higher in private research institutions where graduate students comprise a significantly higher share of the student body.

The evidence suggests that qualitative differences in education are more important at the two year level. Private two year colleges have significantly higher cost per student enrolled, but much lower cost per graduate, compared to public schools. In part this may be due to the greater success of these private schools in graduating students enrolled. But in part it reflects the different kinds of education and training offered by private schools compared to the public schools. As the CPSA data reveals, **the training in private schools is generally more technical, with shorter training periods, compared to the education offered in public community and local district colleges.**

Table 5 , Tuition revenue

INSTITUTION	Tuition and fees per student	Private/public percent
Pvt. Res. Universities	7,403	145%
Pub. Res. Universities	5,094	
Pvt. 4 yr. Colleges	7,023	309%
Public. 4 yr Colleges	2,273	
Pvt. 2 yr. Colleges	4,851	432%
Publ. Comm. & Local Dist. Colleges	1,124	
Total Private	6,773	255%
Total Public	2,655	

*CCHE data

Post secondary educational institutions receive revenue from a variety of sources, including tuition and fees, government transfers, private transfers, and sales and services. From the perspective of private citizens, the direct costs of education are borne in the form of tuition and fees they pay to send their children to college. The indirect costs of education are paid in the form of taxes used for government transfers. The focus of this study is on that portion of costs born by individual Colorado citizens, either directly in tuition fee payments, or indirectly in the form of state government appropriations and s